

Lesson 5: Worksheet 5.3 - Play a tune

In this activity, you need to write a program to make Edison play a musical tune.

You can get Edison to play a tune using the `Ed.PlayTune()` function and a special type of input called a 'string.'

Using a string to play a tune

In Python, a 'string' is a list of characters in order. A 'character' is anything you can type on the keyboard like a letter, a number, or a special character like \$ or #. For example, 'Meet Edison' is a string, 11 characters long (10 letters and 1 space).

In the EdPy app, we need to use a string to play a musical tune. We call this a 'tune string.'

Tune strings are a special string of characters that represent particular tunes. Tune strings are made up of notes and duration inputs, which are represented by single characters.

A tune string looks like this: "ndndndndnd...ndz" where n is a note from the notes table and d is duration from the duration table:

Notes Table

String character	Plays musical note
m	low A
M	low A sharp
n	low B
c	C
C	C sharp
d	D
D	D sharp
e	E
f	F
F	F sharp
g	G
G	G sharp
a	A
A	A sharp
b	B
o	high C
R	rest
z	end of tune

Duration Table

String character	Plays
1	whole note
2	half note
4	quarter note
8	eighth note
6	sixteenth note

All tune strings must end with the 'z' character to end correctly.

To create a tune string, you need to call the function `Ed.TuneString()`, which has two input parameters. The size of the string (in other words, the number of characters in the string) is the first parameter, and the actual string you want to play is the second parameter.

You can change the speed your tune plays by changing the `Ed.Tempo` variable in the Setup code.

Your turn:

Write the following code to play the tune 'Mary Had a Little Lamb':

```

1
2 #-----Setup-----
3
4 import Ed
5
6 Ed.EdisonVersion = Ed.V2
7
8 Ed.DistanceUnits = Ed.CM
9 Ed.Tempo = Ed.TEMPO_MEDIUM
10
11 #-----Your code below-----
12 maryLamb = Ed.TuneString(53, "e4d4c4d4e4e4e2d4d4d2e4g4g4e4d4c4d4e4e4e4e4d4d4e4d4c1z")
13
14 Ed.PlayTune(maryLamb)
15 while Ed.ReadMusicEnd() == Ed.MUSIC_NOT_FINISHED:
16     pass
17

```

This is the tune string in the program:

"e4d4c4d4e4e4e2d4d4d2e4g4g4e4d4c4d4e4e4e4e4d4d4e4d4c1z"

Experiment with changing the Ed.Tempo value in the Setup code.

1. What are the different values that Ed.Tempo can take?

Hint: Remember you can use the autocomplete feature in the EdPy. Try typing 'Ed.TEMPO' and see all the possible values for Ed.TEMPO the autocomplete brings up.

2. Which Ed.TEMPO value will make the tune play the fastest?
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3. Modify your program to only play some part of the tune. Describe the changes you had to make to your program to only play a part of the tune.